

Staff Summary Report



Planning Commission Date: 06/27/06

Agenda Item Number: 3

SUBJECT: Hold a public hearing for Loma del Rio for a historic designation, located at 715 North Mill Avenue, in the AG, Agricultural District.

DOCUMENT NAME: 20060627dsd2k03


ZONING AND DEVELOPMENT CODE (0414-02) (0414-05)

SUPPORTING DOCS: Yes

COMMENTS: Hold a public hearing for **LOMA DEL RIO (CC060064 / HPO-2006.40 / ORD NO. 2006.43)** (City of Tempe, property owner / Tempe Historic Preservation Office, applicant) for the historic designation of the remains of a Hohokam residence, located at 715 North Mill Avenue, in the AG, Agricultural District.

PREPARED BY: DeeDee (D²) Kimbrell, Planner II (480-350-8438)

REVIEWED BY: Steve Venker, Planning and Zoning Manager (480-350-8920) 

FINAL REVIEW BY: Lisa Collins, Planning Director (480-350-8989) 

LEGAL REVIEW BY: N/A

FISCAL NOTE: N/A

RECOMMENDATION: Staff – Approval
Historic Preservation Commission – Approval
Parks and Recreation Board – Approval

ADDITIONAL INFO: The request is located south of Curry Road and east of Mill Avenue on a 3.5 acre portion of a 72 acre parcel. This request is for the historic designation of the remains of a Hohokam residence. Loma del Rio (hill by the river) is an archaeological site occupied by the Hohokam during the late Classic Period. Ceramic and lithic evidence recovered from the site indicates occupation between A.D. 1300 and A.D. 1450. The site contains evidence of a block of six connected rooms and one isolated room on the east side, which is thought to have been used for cooking and food processing.

Loma del Rio is significant as one of the first two sites where sherd tempering in Hohokam ceramics has been detected. It is also significant because of the use of stone cobble as a core for adobe wall construction and is one of very few locations where farming occurred in terrace gardens built into the hillside.

The Historic Preservation Office, Historic Preservation Commission, and the Parks and Recreation Board recommend to the Planning and Zoning Commission and City Council that the property be designated as a Tempe Historic Property.

The Development Services staff concurs with the recommendation by the Historic Preservation Commission for the historic designation and listing in the Tempe Historic Property Register for the 3.5 acre archaeological site only.

ATTACHMENTS:

1. List of Attachments
 - 2-4. Comments
 4. Reasons for Approval
 5. History & Facts / Description
 - 5-6. Footnotes
-
- A. Ordinance No. 2006.43
 - B. Location Map
 - C. Aerial Photo
 - D. Site Photos
 - E. HPC Staff Report

COMMENTS:

HISTORY

Loma del Rio (hill by the river) is an archaeological site occupied by the Hohokam during the late Classic Period. Ceramic and lithic evidence recovered from the site indicates occupation between A.D. 1300 and A.D. 1450. Loma del Rio was probably the residence of 15 to 20 people, perhaps an extended family including cousins, aunts and uncles, and several generations of parents. The site contains evidence of a block of six connected rooms and one isolated room on the east side thought to have been used for cooking and food processing. Room walls were constructed from stone masonry set in adobe mortar, which is on trenches excavated to bedrock. At some point during occupation, doorways in three of the rooms on the north and west sides were sealed and the rooms were likely used for storage. A cobble bounded, caliche-paved, activity surface or patio separates the roomblock from the single room at the east by 6 to 7 meters. Crescent-shaped agricultural terraces on the hillside southwest of the roomblock complete the inventory of structures at the site. The crescent-shaped agricultural terraces built into the hillside were ideal for growing agave (aka the Century Plant), which requires no irrigation. Agave grown at Loma del Rio may have been consumed on site and traded with local villages. Besides local agave trading, evidence of trade between Loma del Rio and people as far as 300 miles away was found at the site. Archaeologists determined this by distinctive pottery and stone tool fragments, found at the site, which appear to have come from such places as Casas Grandes, Mexico; Mule Creek, New Mexico; and Flagstaff, Arizona. In fields below the terraces, crops such as corn, beans, and squash could have been grown in the floodplain of the Salt River, and certainly flora and fauna native to this riverine habitat were exploited by the occupants of Loma del Rio.

CONTEXT

The Loma del Rio Archaeological Site is located on a 3.5 acre portion of a 72 acre parcel (132-04-002E) within the 296 acre Tempe Papago Park.

CRITERIA FOR EVALUATION

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- ☐ A. That are associated with events that have made a significant contribution to the broad patterns of our history (Community Planning and Development); or
- ☒ B. That are associated with the lives of significant persons in our past; or
- ☐ C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Architectural Styles); or
- ☒ D. That have yielded or may be likely to yield, information important in history or prehistory.

DESCRIPTION

Loma del Rio ("hill by the river") is located on the crest of a ridge on the north side of the Rio Salado. The Loma de Rio Archaeological Site is located on a 3.5 acre portion of a 72 acre parcel (132-04-002E) within the 296 acre Tempe Papago Park. This archaeological site includes a Hohokam ruin that is approximately 650 years old and is easily accessible to the public. Stabilized and enhanced with a ramada and wheelchair accessible path, visitors may explore the ruin at no cost.¹

Loma del Rio was a small Hohokam residence that was occupied during the Classic Period, some time between A.D. 1200 and 1450. The site might have been home to 15 or 20 people belonging to an extended family. Several generations of parents, grandparents, siblings, aunts, uncles and cousins probably lived together. The site contains the remains of a block of six rooms, an isolated room, a stone-paved area and agricultural terraces on the slope of the hill immediately to the southwest of the habitation. The single room on the east side appears to have been used for cooking and processing food. The remaining six rooms were built as residences.

However, some time during the occupation of the site, the doors of three of the rooms on the north and west side of the roomblock were sealed off, probably so they could be used for storage. They would have been entered from an opening in the roof. The concentration of rocks on the southeast side of the site appears to form the surface of an open area that was used for a variety of domestic activities. The site at one time may have also contained a walled plaza.²

INTEGRITY

The adobe walls of Loma del Rio were covered in 1994 in order to minimize further erosion and deterioration. In 1928, archaeologists estimated that the partially buried walls were at least six feet high. Today, the walls are no more than three feet high and have collapsed in many places. If left exposed, the site would have faded completely into the landscape. There is no effective means of treating the adobe to stop deterioration. Covering the structure will preserve what remains for future generations. The walls can be uncovered for further study or in the event that a technique is developed to preserve and stabilize adobe.³

Loma del Rio was last excavated in 1984 and 1985 by archaeologists from Arizona State University. After the excavation was completed, plastic sheeting and soil were placed over the site. These materials have been left in place. When the stabilization began in 1994, a special synthetic textile was placed over the existing surface to provide a moisture-resistant layer while allowing air to circulate through the soil. The mound was built layer upon layer using soil similar in chemical composition to the natural terrain. Each layer was compacted to minimize erosion and the surface of the mound was graded to provide runoff. Historic photographs were used to make the mound look much as it did before it was excavated. In the last decade, natural vegetation has grown over the mound, holding the soil in place and further minimizing erosion.⁴

SIGNIFICANCE

Loma del Rio is significant as one of the first two sites where sherd tempering in Hohokam ceramics has been detected. Classification of prehistoric ceramics according to their stylistic and technological characteristics has been an important component of southwestern archaeological research since its inception. Ceramics are used to define prehistoric cultural units, delineate their boundaries, and identify their chronological sequence. Untempered clay used in ceramic production will shrink and crack during drying or firing. To alleviate this, various forms of temper were added to the clay to provide greater strength. Crushed rock was frequently employed for this purpose. Increasingly during the late Classic period, old broken pottery was crushed and added to the clay as temper, providing an additional diagnostic ceramic attribute. Sherd tempering appears to be limited to redwares at Loma de Rio, indicating early application of this method in the temporal ceramic sequence.^{5 6 7 8}

Loma del Rio is significant because of the use of stone cobble as a core for adobe wall construction. The walls of the rooms at Loma del Rio were constructed by forming adobe around a core of stones. The stones were taken from the local bedrock formation. The adobe was made by mixing clay from the river banks with water. Wooden forms may have been placed on either side of the stone core in order to build up the adobe walls. The surfaces of the walls may have been plastered with caliche, a hard-packed soil that contains high concentrations of lime (calcium carbonate). While this construction method is seen in other areas, it is uncommon in the Phoenix Basin.⁹

There is evidence for a network of crescent-shaped terrace gardens built into the hillside to the west and south of the roomblock. In addition to irrigation agriculture, Hohokam farmers also built hillside terraces to contain small amounts of rain. These terraces were ideal for growing agave, also known as the century plant, because agave plants required very little water. Agave was an important food source, especially during periods of drought. The Hohokam ate the nutritious heart of the agave and used the fibers from the leaves to weave cloth or make rope. It is possible that they traded some of the agave with other villages for items that they might have needed. Other crops such as corn, beans and squash could have been planted below in fields irrigated by water from the Salt River.¹⁰

11 12

Loma del Rio is a significant site on many levels. From a recreation and tourism standpoint the site enhances the City of Tempe's park system. Having an archaeological site in an urban setting allows easy accessibility to tourists and residents alike. From an archaeological standpoint, it is important to understanding Tempe and the Valley of the Sun's past as it relates to Hohokam occupation for approximately 1500 years. Small farmsteads are relatively rare in the metropolitan area, and most interpretive efforts have gone into large towns/sites such as Pueblo Grande. Loma del Rio gives us a glimpse at life in a small settlement where farming terraces rarely found in the center of the Salt River Valley occur much as they do further out at higher elevations. Archaeological sites give us more information on how the Valley of the Sun was populated, the location of settlements, and how they interacted with one another.

Loma del Rio is also significant by association with a number of prominent archaeologists of their period including; Cushing, Hayden, Halseth, Midvale, and Schroader. The longevity of the time period that is represented (1890s to 1930s+) reinforces the site's significance to the history of Hohokam archaeology.

For further details and information refer to the Historic Preservation Commission staff report. (Attachment E)

RECOMMENDATIONS

The Historic Preservation Office (HPO) recommends designation of Assessor's parcel number 132-04-002E subject to the Condition 1 as follows.

CONDITION 1 - Notwithstanding the powers and duties of the parks and recreation board in City Code Chapter 23, and the historic preservation commission in City Code Chapter 14A, the commission shall act to assist and advise the board and the city council regarding proposed alterations, new construction, demolition or removal affecting the designated historic 72 acre parcel but retain regulatory authority over the actual 3.26 acre archaeological site.

Please note that on Thursday, June 8, 2006, at a public hearing, the Tempe Historic Preservation Commission (HPC) **DID NOT AGREE** with the Historic Preservation Office recommendation, and instead approved the following recommendation.

The Tempe Historic Preservation Commission unanimously recommended approval of Historic Property designation for the 3.5 acre Loma del Rio Archaeological site only AZ U:9:24 (ASU).

The Parks and Recreation Board recommends designation of the approximately 3.5 acre archaeological site with the condition that Tempe Preservation Commission or Historic Preservation Office be consulted for any future projects potentially affecting the 72 acre Assessor's Parcel Number 132-04-002E.

SUMMARY

Loma del Rio is an excellent candidate for historic designation and listing in the Tempe Historic Property Register. Perched on the high ground of the Papago Buttes, the Loma del Rio Archaeological Site represents an island of natural desert in a vast plain of prehistoric irrigated fields. The Loma del Rio site shows a different aspect of Hohokam society; use of the desert in ways not represented at other interpretive facilities.

The request to designate the property as an Historic District furthers the mission of the Historic Preservation Commission. Historic Preservation Office, Historic Preservation Commission, and the Parks and Recreation Board recommend to the Planning and Zoning Commission and City Council that the property be designated as a Tempe Historic Property.

The Development Services staff concurs with the recommendation by the Historic Preservation Commission for the historic designation and listing in the Tempe Historic Property Register for the 3.5 acre archaeological site only.

REASONS FOR APPROVAL:

1. The Historic Preservation Commission and Historic Preservation Office recommends approval for the request to designate Loma del Rio as an Historic District Designation and listed on the Tempe Historic Property Register
2. The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
 - (a) That are associated with the lives of significant persons in our past; or
 - (b) That are yielded or may be likely to yield, information important in history or prehistory.

HISTORY & FACTS:

1200-1450	Loma del Rio occupied by the Hohokam people during Classic Period.
February 9, 1988	Loma del Rio part of an archaeological survey of a 40-acre area of Tempe Papago Park commissioned by the City of Tempe titled "A Plan for the Management of Archaeological Sites in the Tempe Papago Park Area." It was conducted by Linda Williams and Karen Atwell on behalf of the Office of Cultural Resource Management, Department of Anthropology, Arizona State University.
June 29, 1990	Arizona Parks Board awards Tempe a Heritage Fund Historic Preservation Grant for Loma del Rio stabilization.
May 11, 2006	Neighborhood meeting was held for the request by Loma del Rio for the historic designation and listing in the Tempe Historic Property Register.
May 23, 2006	Tempe Historic Preservation Commission presented the request by Loma del Rio for the historic designation and listing in the Tempe Historic Property Register to the Tempe Rio Salado Advisory Commission.
June 8, 2006	Tempe Historic Preservation Commission recommended approval of the Loma del Rio Archaeological Site historic property designation and listing in the Tempe Historic Property Register for the 3.5 acre site only.
June 13, 2006	The Tempe Parks and Recreation Board recommended approval of the Loma del Rio Archaeological Site historic property designation and listing in the Tempe Historic Property Register. The Parks and Recreation Board recommends designation of the approximately 3.5 acre archaeological site with the condition that Tempe Preservation be consulted for any future projects potentially affecting the 72 acre Assessor's Parcel Number 132-04-002E.

DESCRIPTION:

Owners –	City of Tempe
Applicant –	Joe Nucci, Historic Preservation Officer
Existing zoning –	AG, Agricultural
Archeological site area –	3.5 acres

¹ Savage, Kim, 1999; Pueblo Loma del Rio, an ancient Hohokam site in Tempe Papago Park [Site AZ U:9:24 (ASU)] http://archaeology.asu.edu/vm/southwest/loma/loma_del_rio.htm [The Archaeological Research Institute was established in 1995 as a unit of Arizona State University to undertake the preservation of archaeological materials and related data, to pursue research activities associated with the archaeological record, and to conduct educational programs to disseminate knowledge of the past to Arizona's citizens.] *Site links to Archaeological Research Institute Loma del Rio narrative.*

² Tempe Historical Museum 2005 - Loma del Rio: Prehistory in Papago Park http://www.tempe.gov/museum/prehistory/loma_del_rio.htm [The Tempe Historical Museum is a center where the community comes together to celebrate Tempe's past and ponder the future. THM is a community history museum that explores Tempe's identity and builds connections between residents and their community. Toward that end, THM Staff support the Tempe Preservation program through active participation, advocacy, consultation, and research. Museum Administrator, Dr. Amy Douglass, initiated the process for historic property designation of the Loma del Rio Archaeological Site and listing in the Tempe Historic Property Register by providing the nomination.] *Site links to Tempe Historical Museum Loma del Rio narrative.*

³ Tempe Historical Museum, 2005

⁴ Tempe Historical Museum, 2005

⁵ Kwiatkowski, 1988

- ⁶ Douglass, Amy A., 1990; LD179.15 1987D .D68 Prehistoric exchange and sociopolitical development in the plateau southwest (In The Evolution of North American Indians, a 31 volume series of outstanding dissertations edited by David Hurst Thomas and published by Garland Publishing, New York). [annotate] *Site links to ASU Library call number: LD179.15 1987D .D68 dissertation basis for published volume.*
- ⁷ Logan Museum Pottery-Making Techniques <http://www.beloit.edu/~museum/logan/southwest/introduction/techniques.htm> [The first step in making pottery was to collect and prepare appropriate clay. Clay was usually obtained locally, as it had to be carried from the source to the village. Because of this, clay is an important factor today in identifying pottery. In the most general terms, Mogollon pottery is made from brown clays, Hohokam from buff, Anasazi from white to gray, and Salado from red. Of course not all clay in one area is the same, and there is a fair amount of variation throughout all types.]
- ⁸ Kwiatkowski, 1988
- ⁹ Tempe Historical Museum, 2005
- ¹⁰ Tempe Historical Museum, 2005
- ¹¹ Savage, 1999
- ¹² Gasser, 1976

ORDINANCE NO. 2006.43

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF TEMPE, ARIZONA, AMENDING THE CITY OF TEMPE ZONING MAP, PURSUANT TO THE PROVISIONS OF ZONING AND DEVELOPMENT CODE PART 2, CHAPTER 1, SECTIONS 2-106 AND 2-107, RELATING TO THE LOCATION AND BOUNDARIES OF DISTRICTS.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF TEMPE, ARIZONA, as follows:

Section 1. That the City of Tempe Zoning Map is hereby amended, pursuant to the provisions of Zoning and Development Code, Part 2, Chapter 1, Sections 2-106 and 2-107, designating the below described property as the Loma del Rio Historic Overlay Designation.

LEGAL DESCRIPTION

A portion of parcel 132-04-002E.

Loma del Rio Archaeological Site AZ U:9:24 (ASU), 3.5 acres of a 72 acre parcel (132-04-002E)

Section 2. Further, those conditions of approval imposed by the City Council as part of **Case #HPO-2006.43** are hereby expressly incorporated into and adopted as part of this ordinance by this reference.

Section 3. Pursuant to City Charter, Section 2.12, ordinances are effective thirty (30) days after adoption.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF TEMPE, ARIZONA, this _____ day of _____, 2006.

Mayor

ATTEST:

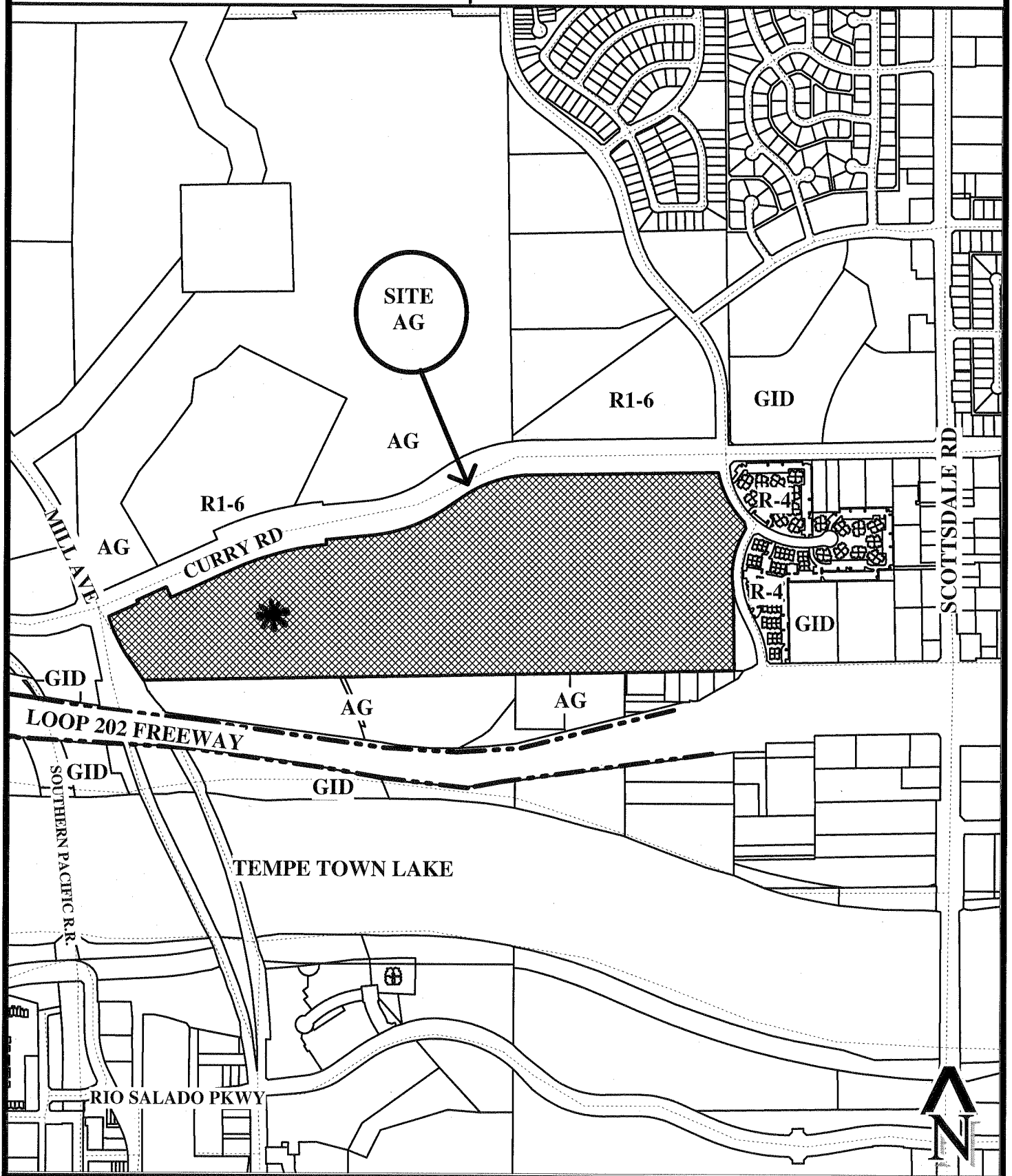
City Clerk

APPROVED AS TO FORM:

City Attorney

LOMA DEL RIO

DS 060608 CC 060064
HPO-2006.40 ORD NO. 2006.43

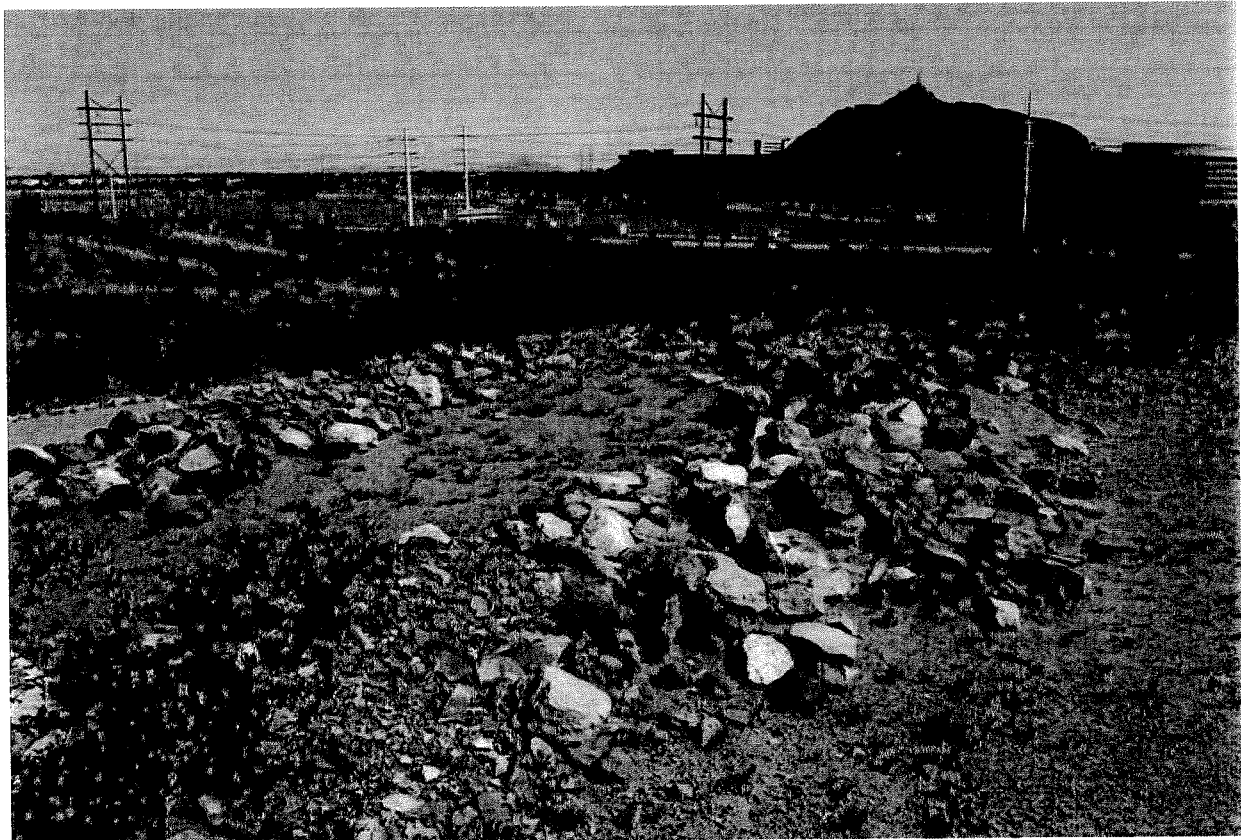


Location Map



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<http://www.tempe.gov/lake/Habitats/LomadelRioRuinsPhotos.htm>



<http://www.tempe.gov/lake/Habitats/LomadelRioRuinsPhotos.htm>





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PRESERVATION

**HISTORIC PRESERVATION
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Mike Deskin
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**HISTORIC PRESERVATION
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Joe Nucci



The City of Tempe is a
Certified Local
Government,
in association with the
United States Department
of the Interior/National
Park Service



Tempe Historic
Preservation Office
Community Development
Department
21 East 6th Street, Suite 208
P.O. Box 5002
Tempe, AZ 85280



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Staff Report

to the Historic Preservation Commission (Tempe HPC)

Contributions By: Pamela Rector, Tempe Preservation Volunteer

June 8, 2006 - HPC Public Hearing (revised per BG 05/29/2006)

Loma del Rio Archaeological Site AZ U:9:24 (ASU)

Historic Property Designation HPO-2006.40 ORD# 2006.43

BACKGROUND / STATUS

On April 17, 2006, Historic Preservation Office received a nomination for designation of the Loma del Rio Archaeological Site as a Tempe Historic Property and listing in the Tempe Historic Property Register from the Historical Museum Administrator. The application has been reviewed by HPO and all requirements for notification, posting and advertisement, as set forth in Tempe City Code Chapter 14A "the Tempe Historic Preservation Ordinance", have been met and public hearings set.

The property is located at 715 North Mill Avenue, on a ^{3.5}2.5 acre portion of a 72 acre parcel (132-04-002E) within the 296 acre City of Tempe owned part of the 1500 total acre Papago Park.¹ The property is zoned AG – Agricultural and is located in the Rio Salado Overlay District.² The property is designated Public Open Space in General Plan 2030.³

ZDC Neighborhood Meeting Date: May 11, 2006

Tempe Rio Salado Advisory Commission HPC Presentation: May 23, 2006

HPC Public Hearing Date: June 8, 2006

Tempe Parks & Recreation Board HPC Presentation: June 13, 2006

P&Z Public Hearing Date: June 27, 2006

Council 1st Public Hearing Date: July 20, 2006

Council 2nd Public Hearing Date: August 3, 2006

SUMMARY

HPO recommends Loma del Rio as an excellent candidate for historic designation and listing in the Tempe Historic Property Register. Perched on the high ground of the Papago Buttes, the Loma del Rio Archaeological Site represents an island of natural desert in a vast plain of prehistoric irrigated fields. Hohokam (A.D. 500 to 1450) and early Akimel Au-Authm⁴ (A.D. 1700 to 1850) treated the Papago Park area in a way which was different and unique from their villages spread out over other parts of the valley floor. Loma del Rio provides insight into Hohokam use of non-irrigated fields to raise desert plants. Loma del Rio is significant as one of the first two sites where sherd tempering in Hohokam ceramics has been detected. Loma del Rio is significant because of the use of stone cobble as a core for adobe wall construction. Loma del Rio is significant as one of very few locations where farming occurred in terrace gardens built into the hillside. The site indicates use as an Akimel Au-Authm shrine in the protohistoric period. The Loma del Rio site shows a different aspect of Hohokam society; use of the desert in ways not represented at other interpretive facilities.⁵

HISTORY

Loma del Rio (hill by the river) is an archaeological site occupied by the Hohokam during the late Classic Period. Ceramic and lithic evidence recovered from the site indicates occupation between A.D. 1300 and A.D. 1450. Loma del Rio was probably the residence of 15 to 20 people, perhaps an extended family including cousins, aunts and uncles, and several generations of parents. The site contains remains of a block of six connected rooms and one isolated room on the east side thought to have been used for cooking and food processing. Room walls were constructed from stone masonry set in adobe mortar on trenches excavated to bedrock. At some point during occupation, doorways in three of the rooms on the north and west sides were sealed and the rooms were likely used for storage. A cobble bounded, caliche-paved, activity surface or patio separates the roomblock from the single room at the east by 6 to 7 meters. Crescent-shaped agricultural terraces on the hillside southwest of the roomblock complete the inventory of structures at the site. The crescent-shaped agricultural terraces built into the hillside were ideal for growing agave (aka the Century Plant), which requires no irrigation. Agave grown at Loma del Rio may have been consumed on site and traded with local villages. Besides local agave trading, evidence of trade between Loma del Rio and people as far as 300 miles away was found at the site. Archaeologists determined this by distinctive pottery and stone tool fragments found at the site which appear to have come from such places as Casas Grandes, Mexico; Mule Creek, New Mexico; and Flagstaff, Arizona. In fields below the terraces, crops such as corn, beans, and squash could have been grown in the floodplain of the Salt River, and certainly flora and fauna native to this riverine habitat were exploited by the occupants of Loma del Rio.⁶

In 1887, Frank Hamilton Cushing led the first archaeological expedition to the Salt River Valley. He established a base camp on the north bank of the river near where the ASU Community Service Building is now located. In 1887, Cushing identified the Loma del Rio site as "Los Pueblos Arriba" (Haury 1945:189) and reported evidence of use as an Akimel Au-Auhtm shrine during the protohistoric period. Cushing collected Casa Grande Red-on-buff sherds, Gila Polychrome sherds, projectile points and other artifacts from Loma del Rio. He reported the presence of "a little Pima shrine, not very recent, nor yet exceedingly ancient, consisting of a terraced altar built up of loose stones that had fallen from the walls, on a step of which were numerously displayed a bunch of arrows with hard-wood, sharpened foreshafts, all neatly laid, somewhat fan-shaped, and held in place by two large flattened stones. In the midst of these were a few scattered beads, mostly of blue glass, but some white and two or three red."^{7 8}

In 1928, Gila Pueblo archaeological staff (possibly including Frank Midvale; a member of this group who was living in Phoenix at this time) surveyed the Loma del Rio site. Established by Harold S. Gladwin and Winifred Jones MacCurdy (Gladwin) in 1928 as a private archeological research institute, the Gila Pueblo Archaeological Foundation first defined and then detailed the Hohokam archaeological tradition. In 1928, Gila Pueblo identified the Loma del Rio site as Mesa 1-6 (GP) and plotted it on Gila Pueblo map 023709. The site was described as a seven room stone pueblo, possibly of two stories, covering about 150 by 150 yards. The walls were noted to average 18 inches thick composed of horizontal stone with adobe in the cracks. Although past efforts to locate documents pertaining to Gila Pueblo activities at the site have not succeeded, evidence indicates Gila Pueblo conducted excavations within two or more rooms at Loma del Rio. Book 6 of the Midvale collections at the ASU Department of Anthropology provides a site plan map and photographs the Loma del Rio site identified as "El Pueblito" or the "Stone Ruin". Midvale's notes indicate circa 1931, he collected 100 sherds from the site; 62 redware (36 with burnished interiors and the remainder with plain interiors), 38 plainware, and 2 Gila Polychrome.^{9 10}

In 1939, prominent archaeologists Odd S. Halseth, Albert H. Schroeder and Julian T. Hayden recorded the Loma del Rio archaeological site together as part of Schroeder's survey #22. Halseth and Hayden had worked with the Civilian Conservation Corps and Schroeder with the Works Progress Administration. The 1930s witnessed a new kind of large-scale archeological project as part of federal unemployment relief projects and programs funded by the Works Progress Administration and other public employment programs of the New Deal. In order to employ large numbers of people affected by the depressed economy, archeological projects of this decade focused on fieldwork and on keeping large crews fruitfully employed in excavating archeological sites. Unfortunate consequences of many of these projects were delays in the production of descriptive reports, delays in data analysis, and little publication of project results. Despite these drawbacks, the programs resulted in a substantial increase in knowledge about American archaeology, especially in the Southeast. In 1939, Schroeder, Halseth, and Hayden identified the Loma del Rio site as AZ U:9:14 (PG) and estimated that Civano sherds accounted for 68% of the ceramic assemblage with the remainder dating to the Soho phase. Field notes indicate the site was still in a good state of preservation at this point and relatively free from post-occupational disturbance.^{11 12 13}

In the 1960s, after prolonged neglect and vandalism, the Loma del Rio site again became the focus of scientific interest. In 1961, the site was visited by Dr. Donald H. Morris and Frank Midvale. Although no collections were made in 1961, Morris and Midvale identified the site as Loma del Rio, completed an ASU Archaeological Survey Form with a sketch map, and noted the site had been heavily impacted by pot hunters. Soon after, 59 sherds were collected from the site and recorded on an ASU Cultural Inventory Methods class specimen log sheet. In 1964, Arizona State Museum personnel surveyed Loma del Rio and identified the site as AZ U:9:10 (ASM). They also reported the site was badly pot hunted with some rooms excavated to a depth of 1.5 meters. ASM collected one box of materials including Classic period redwares.¹⁴

By the 1970s, Loma del Rio had come to the attention of ASU. In 1973, Betina Rosenberg and Donald E. Weaver, Jr. surveyed the site, and identified the Loma del Rio site as AZ U:9:24 (ASU), the designation used for all subsequent site activities. In 1977, Dr. Alfred E. Dittert, Jr. and ten graduate students from his ASU Cultural Inventory Methods class assessed archaeological resources within the Rio Salado Developmental District and identified interpretive opportunities at Loma del Rio.¹⁵

From 1984 to 1986, Arizona State University archaeology students under the supervision of Dr. Dittert carried out various excavations at the site. In 1988, Loma del Rio was part of an archaeological survey of a 40-acre area of Tempe Papago Park. Commissioned by the City of Tempe, ASU produced a document titled "A Plan for the Management of Archaeological Sites in the Tempe Papago Park Area" prepared for the city by Linda Williams and Karen Atwell, Office of Cultural Resource Management, Department of Anthropology, Arizona State University.¹⁶

In 1991, the Arizona Parks Board awarded a Heritage Fund historic preservation grant to the City of Tempe for stabilization of the Loma del Rio site. From 1993 through 1995, the site was stabilized by the City of Tempe in partnership with Arizona State Parks; Dr. Amy Douglass Tempe Historical Museum Administrator (project conception and realization), Dr. Glen Rice and the ASU Office of Cultural Resource Management (field work), National Park Service (technical assistance with stabilization), Dr. Dittert (expertise on the Hohokam and information regarding prior excavation of the site), Howard Needles Tammen & Bergendoff (HNTB), Architects, Arizona State Parks and the State Historic Preservation Office (Heritage Fund grant).

On October 14, 1995, the Loma del Rio Archaeological Site was dedicated by the City of Tempe as part of the Rio Salado Expo that included dedication of Papago Park Trails and Rio Salado Project Update presentations. Today, this 650 year old archaeological site has been stabilized and is easily accessible to the public. A shade ramada and a wheelchair accessible path add to the comfort of visitors who explore the ruin along an interpretive trail. Special plaques inform visitors of the unique characteristics of the site.

CONTEXTS

The term "Hohokam" has its roots in the O'odham language, referring specifically to ancestral people who are prominent in O'odham oral traditions. It is in this sense that the word is most meaningful to O'odham speakers. However, the term will be used in our discussion in its archaeological sense, referring to a tradition of shared material culture, economy, and social organization in the Sonoran Desert region that is distinguishable from adjacent related traditions by about A.D. 500. It is now generally recognized that the Hohokam archaeological tradition was not made up of a single biologically or culturally homogeneous people, but was an archaeologically distinctive tradition that came to be shared by a variety of local populations in the Sonoran Desert as they grew out of local Archaic antecedents. The Hohokam were a multi-ethnic group that encompassed speakers of earlier forms of the Tepiman (Tepehuan and Piman) languages as well as River Yuman and possibly the Zuni language. Three contexts are presented as a basis for significance under National Register Criteria D.¹⁷

Tempe Papago Park

The Loma de Rio Archaeological Site is located on a 2.5 acre portion of a 72 acre parcel (132-04-002E) within the 296 acre Tempe Papago Park. Tempe Papago Park and environs include a number of previously identified archaeological sites including; Bedrock Mortar Site AZ U:9:11 (ASM), East Park Site AZ U:9:12 (ASM), Loma Del Rio AZ U:9:24 (ASU), Bedrock Mortar Site AZ U:9:25 (ASM), East Park Site AZ U:9:26 (ASM), East Park Site AZ U:9:27 (ASM), East Park Site AZ U:9:28 (ASM), Tempe Glyphs Site AZ U:9:30 (ASU), Terraced Butte Site AZ U:9:77 (ASM), and West Park Site AZ U:9:91 (ASU). In 1991, Jerry Howard published the results of an exhaustive Hohokam canal study which identified archaeological sites and features throughout the Salt River Valley. This excellent work has been adapted to serve as the basis for identifying archaeologically sensitive areas in the City of Tempe GIS-based permits system. The areal extent of the archaeologically sensitive portion of Tempe Papago Park covers a contiguous 172.672 acre area (0.2698 square miles), however, most of the sites and features remain buried or have been subsequently destroyed.¹⁸

Approximately 20 years ago, the ASU Office of Cultural Resource Management, working in cooperation with the City of Tempe, prepared plans for the management of archaeological sites in the Tempe Papago Park area. This study surveyed each of the above listed sites and provided recommendations for their collective management. One result of this work occurred in 1991, when the Loma del Rio Archaeological Site AZ U:9:24 (ASU) was meticulously stabilized and carefully interpreted to provide the public benefit of insight into the significance of Hohokam habitation in Tempe Papago Park.¹⁹

The high ground of the Papago Hills represents an island of natural desert in a vast plain of canal irrigated fields. Prehistoric Hohokam (AD 700 to 1450) and early the Akimel Au-Authm (AD 1700 to 1850) treated the Papago Park area in a way which was different and unique from their villages spread out over other parts of the valley floor. The area provides a perspective on the Hohokam use of non-irrigated fields to raise desert plants and demonstrates how important gathering plants was to their diet. The area includes a number of shrines mostly of Akimel Au-Authm origin, but there are some indications of earlier uses for Hohokam shrines.²⁰

Loma del Rio and Tempe Papago Park have the potential for showing a different aspect of Hohokam society, use of the desert in a way which is not represented at Pueblo Grande (City of Phoenix) or Park of the Canals (City of Mesa).

Hohokam Classic Period

As a broad overview, three general periods of growth and change within the archaeological tradition known as the Hohokam can be recognized. The first period witnessed development of agriculture, pottery, and the establishment of settled villages leading to a sedentary lifestyle. These developments are subsumed under the heading of the Pioneer period, which dates between 300 B.C. and A.D. 700. The second period is characterized by the development of irrigation systems, large villages, ornate arts and crafts industries, public architecture such as ball courts and mounds, formalized mortuary ritual, and geographic expansion. This middle period encompasses the Colonial and Sedentary periods and dates between A.D. 700 and 1150. The final or late period witnessed further expansion of irrigation systems in some areas, shifts in settlement patterns, shifts in architectural styles from pit houses to above ground walled villages, significant changes in pottery and craft assemblages, shifts in burial patterns, and the reorganization of exchange networks. This horizon, known as the Classic period, dates between A.D. 1150 and 1390, and is the latest period identified for the Hohokam sequence. Loma del Rio was inhabited during the later part of the Classic period.²¹

The Classic Period, after about A.D. 1150, brought conspicuous changes among the Hohokam. Local population aggregation was accompanied by the appearance of platform mounds as community centers. Compound architecture evolved from pre-Classic pithouse and house-in-pit predecessors (Sires 1983a).²² Polychrome pottery appeared. Inhumation (rare in earlier periods) challenged cremation as the dominant burial form. Numerous other changes in the world of the Hohokam have been identified during this time period including the regional extent of the Hohokam tradition. Some areas where Hohokam ballcourts were seen earlier ceased to show Hohokam characteristics, while at the same time, platform mounds that first appeared among the Hohokam at Gila River settlements like Gatlin and Snaketown spread to areas where the earlier Hohokam ballcourts were not found, such as the Tonto Basin.²³

After about A.D. 1000-1100 there is evidence of the presence of Yuman groups from the west, first in the Papaguería and on the Gila River at Gila Bend (the westernmost extent of the Hohokam tradition), and later at sites in the Phoenix area. There also was development of a distinctive, although still generally Hohokam in appearance, southern network that included the Gila Bend area, the Tucson Basin, and the Papaguería. In the north, the Sinagua bounded the Hohokam. The closely-related Trincheras Culture flourished in northern Mexico, immediately south of the Hohokam.²⁴

By A.D. 1300 many Hohokam characteristics had markedly changed. Building methods included pithouses and above ground structures that were post-reinforced, rock reinforced, or solid caliche-adobe and contiguous room structures were present. By this time, the single family or small extended family appears to have been the primary social unit as Hohokam society experienced a general decline in complexity. The distribution of sites from this period suggests varied subsistence strategies, which likely included small scale irrigation, at least in areas where canal headgates could be easily rebuilt after the catastrophic floods of the mid to late fourteenth century.²⁵

After about A.D. 1350 there was a substantial, although far from complete, decline in population in the Phoenix Basin, associated with the end of platform mound ceremonialism. Occupation of some major village sites continued on a less intensive basis while smaller settlements on seasonal drainages were established (Sires 1983b).²⁶ Although these changes show a shift to a less aggregated settlement system and apparently to a less hierarchical society, there were still signs of long-distance trade, of productive agriculture, and generally of a different but nevertheless viable society. From the time that the Polvorón Phase was first identified, it has been apparent that this was not a time of complete collapse and depopulation. Regional trade in some commodities, for example obsidian, even increased after the mid-1300's (Teague 1984).²⁷

Perhaps the most distinctive feature of the Hohokam tradition during these centuries is the economic and social diversity and flexibility that was brought to life in the Sonoran Desert. There were major changes in various aspects of the tradition over a period of many centuries, sometimes leading to significant differences in the appearance of Hohokam settlements, but these reflect the underlying adaptability of the Hohokam rather than cultural discontinuities.²⁸

The continuing relationship between the prehistoric Hohokam and the people of the modern Four Southern Tribes: Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, and Tohono O'odham Nation, is referred to as cultural affiliation. Connections between the prehistoric Hohokam of the Phoenix Basin and the people of the Salt River Pima-Maricopa and Gila River Indian Communities are established based on a number of characteristics ranging from broadly defined attributes, such as a relatively dispersed settlement pattern, to such specifics as pottery, figurines, domesticated crops, textiles and basketry, architecture, shared histories and great similarities in language and culture.²⁹

The subsequent context discussion includes an implicit recommendation to define the setting of site AZ U:9:24 (ASU) as Assessor's parcel number 132-04-002E, so as to include a representative sample of the prehistoric context while providing a practicable approach to designation.

Alternative Subsistence Strategies

Adaptation of the southern Arizona environment to human habitation has been a study in contrasts. For several millennia the Akimel Au-Authm have continuously occupied a precarious environment characterized by radical oscillations between periods of abundance and scarcity. This persistence must be attributed to a survival strategy providing maximum security against the threats implicit in the unpredictable surroundings. Despite its cyclical nature, the environment of the modern Akimel Au-Authm has remained relatively unchanged climatically and floristically for the last 2,000 years. There appears to be an ecological continuum in terms of both climate and vegetation in southern Arizona from the beginnings of Hohokam culture up to the widespread Euro-American settlement in the late 1870s.^{30 31}

The Hohokam made productive use of their environment through diversified methods including hunting and gathering, incipient horticulture, intensive agriculture, and trade. Most importantly, all of these methods needed to operate simultaneously.³²

Although alternative subsistence strategies at Loma del Rio evidence simultaneous operation of all primary methods (gathering, incipient horticulture, agriculture, and trade), focus on specialized agriculture, wild food procurement, and trade indicate that this site functioned as an integral part of the larger community. For this reason, small sites such as AZ U:9:24 (ASU) are important to Hohokam archaeology in the Salt River Valley as components, which when fitted together with other small sites and major habitation centers, inform a broader conceptualization of Hohokam cultural complexity.³³

Of all subsistence strategies employed by the Hohokam, gathering wild species was the most predominant. Akimel Au-Authm are believed to have exploited wild species over cultivated varieties at a 2:1 ratio over a 2,000 year continuum. At the time Loma del Rio was inhabited during the late classic period the overall trend toward dependence on wild food products appears to have been operating at a heightened level. Although Hohokam ethnobiology indicates diversity, two dietary staples played prominent roles; the fruit of the saguaro and the bean of the mesquite tree were of paramount importance. The Loma del Rio site is located at the conflux of several ecosystems including native habitat for both saguaro and mesquite. Although now greatly reduced in number, during the period of Hohokam habitation and as late as 1914, when President Woodrow Wilson declared the area a National Monument, Giant Saguaro were present in abundance. Also substantially diminished after the completion of Roosevelt Dam are the riparian Mesquite Bosque, willow, and sage brush biomes that still lined the banks of the Salt River in this area as late as 1868, when W. F. Ingalls mapped soils, topography, and vegetation for his section-line survey; the earliest cadastral survey of the township.^{34 35 36 37 38 39}

From Gasser (1979),⁴⁰ we learn that in order to maintain permanent habitation, access to three ecosystems would have been required: 1) cactus-paloverde upper bajadas for hunting and gathering, wash-floodplains for farming, water, and mesquite bosques, and 3) creosote plains and washes for farming and gathering. In addition to the extensive proxemic concentrations of Saguaro and Mesquite noted above, from Kwiatkowski (1988) we see that the Loma del Rio site contains three plant habitats: 1) *Larrea Tridentata* association, 2) a ravine and canal area, and 3) an ecotone or transition area between these two adjacent ecological communities. Thus the three ecosystem requirement for permanent habitation is exceeded at Loma del Rio. The multiplicity of habitats functioned to offset seasonal and annual variation in species availability, thereby facilitating permanent habitation and justifying investment in more permanent infrastructure.⁴¹

At Loma del Rio, the abundance and variety of wild species available for gathering was supplemented by a relatively unique form of incipient horticulture; agricultural terraces. The mechanism that explains Akimel Au-Authm survival over time in their unpredictable environment has been diversification. In addition to shifting from one resource to another with the passing of the seasons, Loma del Rio residents maintained terraced gardens on the hillside that maximized retention of storm water sheet drainage on the 14% slope hillside. To this day, the terraces evidence higher soil moisture and more robust flora than the surrounding hillsides. In addition, terraces provided microclimatic modification and, minimized thermo inversion damage to cultigens and indigenous species that lacked frost resistance.⁴²

Garden terraces at Loma del Rio were shallow basin-shaped depressions on the west and southwest facing hillside subtending the roomblock. In addition to retaining soil moisture and providing protection from temperature inversion, the terraces trapped sediment extending the depth of the rootlet zone in moderate textured silty-sand above the caliche base. Low ephemeral berms about two meters wide covered an area of about 2.5 acres (1 hectare) in a continuous network. These features have been interpreted as a low-energy investment agricultural method, probably requiring no more maintenance than annual berm rebuilding consisting of replacing fallen cobbles. Similar terrace features, although relatively rare, have been observed on Tempe Butte, in the vicinity of South Mountain, and on Camelback Mountain. While this may appear to suggest minimal use of the technology, these sites represent almost all suitable terrace land for farming in the Salt River Valley.^{43 44}

These terraces were ideal for growing agave, also known as the century plant, because agave plants require very little water. Agave was an important food source, especially during periods of drought. The Hohokam ate the nutritious heart of the agave and used the fibers from the leaves to weave cloth and make rope. Due to the relative frost protection of the terraces, early plantings of food for ceremonial purposes could mature before plantings in the valley lowlands. Delicacies such as onions and mustards may have been grown in the garden terraces along with gourds for utensils and rattles, or tobacco for ceremonial purposes.⁴⁵

Beyond differential microclimatic performance allowing seasonal offsets in production of staple crops and native fauna, another explanation of why terrace gardens were used in an area of such intensive canal system agriculture suggests terracing may represent the agriculture of tenants whose gardens were allocated to marginal lands. Returning to our premise that all agricultural methods needed to operate simultaneously, it has been pointed out that with an average annual rainfall of 25 cm, four years in ten would have resulted in the complete failure of the terraces to produce. Even partial failure would have been a hardship for the inhabitants of Loma de Rio, whose lack of access to a canal system reduced their agricultural alternatives to floodwater farming on the fan of the adjacent ravine and floodplain farming at the margin of the river.^{46 47}

Special foodstuffs may also have been grown in the garden terraces for trade. Among the artifacts recovered from Loma de Rio are a number of items that could only have been obtained by the Hohokam inhabitants in trade. Trade, therefore, becomes part of the discussion of the alternative subsistence strategies context. Exchange of food items often resulted in exchange of the containers in which food was packaged. Intrusive pottery and basket styles may have been the result of food exchange. Of course, pottery and other objects may have been traded directly for their intrinsic or ceremonial value as well. In any case, intrusive ceramics recovered from the Loma del Rio site include; Gila Polychrome, Ramos Polychrome, St. Johns Polychrome, and Wingfield Plain wares. Alabaster, serpentine, shell, steatite, and turquoise have also been recovered from Hohokam archaeological contexts at the site.⁴⁸

While some of these materials originate hundreds of miles away in the Gulf of California and the river valleys of northern Mexico, trade probably operated at many different levels at Loma de Rio. At the intra-village level, reciprocal exchange of goods and services between hamlets and city centers could occur on a routine basis as harvests produced surpluses or seasonal activities required cooperative labor to be organized for large-scale or time-sensitive activities. At the inter-village level, trade and exchange for goods in kind is evidenced by both the ceramic assemblage at Loma del Rio and the distribution patterns of Phoenix Basin wares throughout the areal extents of the Hohokam tradition. At the regional level, trade between more sedentary groups such as the occupants of the permanent structures like Loma del Rio and more nomadic hunters and gathers has proven to be an important link in prehistoric trade networks. Finally, evidence of interaction with Mesoamerica is a fundamental aspect of the Hohokam tradition and trade may have occurred indirectly, as a consequence of participation in other community and regional activities.^{49 50}

The Loma del Rio Archaeological Site AZ U:9:24 (ASU) is a small permanent habitation occupied year-round by the Hohokam during the late Classic period. Located on a rocky escarpment overlooking the Salt River at the confluence of multiple biotic communities, there is a conspicuous absence of access to canal irrigation at this site. Discussion of the Hohokam tradition must at least mention canal irrigated agriculture. The early Classic period saw great agricultural intensification supported by evidence of canal system expansion. Excavations along Canal System Two, the proxemic network to Loma del Rio, illustrate the scale to which the Hohokam altered their landscape. Through construction of canals and associated laterals and reservoirs, the Hohokam created a built landscape on a scale far larger than nearly any

other prehistoric Southwestern society. But Loma del Rio was off the grid. The late Classic period witnessed canal system retraction, possibly in response to a transient period of heavy summer rainfall detrimental to irrigation infrastructure. Concurrent changes in social, political, and religious systems appear to accompany agricultural changes in the transition from the early to late Classic period.⁵¹

Understanding why terrace gardens were used in an area of such intensive canal system agriculture is possible through the alternative subsistence strategies context; which considers that the Hohokam made simultaneous productive use of their environment through diversified methods including hunting and gathering, incipient horticulture, intensive agriculture, and trade. Also implicit in this conceptualization is recognition of small sites as integral components of the community, the region, and throughout the sphere of Hohokam interaction. Both continuity and change would be expected in social, political, and religious systems operating at the level of complexity that evolved to become the Hohokam tradition.

CRITERIA FOR EVALUATION

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- ☐ A. That are associated with events that have made a significant contribution to the broad patterns of our history (Community Planning and Development); or
- ☒ B. That are associated with the lives of significant persons in our past; or
- ☐ C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Architectural Styles); or
- ☒ D. That have yielded or may be likely to yield, information important in history or prehistory.⁵²

DESCRIPTION

Loma del Rio ("hill by the river") is located on the crest of a ridge on the north side of the Rio Salado. This archaeological site includes a Hohokam ruin that is approximately 650 years old and is easily accessible to the public. Stabilized and enhanced with a ramada and wheelchair accessible path, visitors may explore the ruin at no cost.⁵³

Loma del Rio was a small Hohokam residence that was occupied during the Classic Period, some time between A.D. 1200 and 1450. The site might have been home to 15 or 20 people belonging to an extended family. Several generations of parents, grandparents, siblings, aunts, uncles and cousins probably lived together. The site contains the remains of a block of six rooms, an isolated room, a stone-paved area and agricultural terraces on the slope of the hill immediately to the southwest of the habitation. The single room on the east side appears to have been used for cooking and processing food. The remaining six rooms were built as residences. However, some time during the occupation of the site, the doors of three of the rooms on the north and west side of the room block were sealed off, probably so they could be used for storage. They would have been entered from an opening in the roof. The concentration of rocks on the southeast side of the site appears to form the surface of an open area that was used for a variety of domestic activities. The site at one time may have also contained a walled plaza.⁵⁴

INTEGRITY

The adobe walls of Loma del Rio were covered in 1994 in order to minimize further erosion and deterioration. In 1928, archaeologists estimated that the partially buried walls were at least six feet high. Today, the walls are no more than three feet high and have collapsed in many places. If left exposed, the site would have faded completely into the landscape. There is no effective means of treating the adobe to stop deterioration. Covering the structure will preserve what remains for future generations. The walls can be uncovered for further study or in the event that a technique is developed to preserve and stabilize adobe.⁵⁵

Loma del Rio was last excavated in 1984 and 1985 by archaeologists from Arizona State University. After the excavation was completed, plastic sheeting and soil were placed over the site. These materials have been left in place. When the stabilization began in 1994, a special synthetic textile was placed over the existing surface to provide a moisture-resistant layer while allowing air to circulate through the soil. The mound was built layer upon layer using soil similar in chemical composition to the natural terrain. Each layer was compacted to minimize erosion and the surface of the mound was graded to provide runoff. Historic photographs were used to make the mound look much as it did before it was excavated. In the last decade, natural vegetation has grown over the mound, holding the soil in place and further minimizing erosion.⁵⁶

SIGNIFICANCE

Loma del Rio is significant as one of the first two sites where sherd tempering in Hohokam ceramics has been detected. Classification of prehistoric ceramics according to their stylistic and technological characteristics has been an important component of southwestern archaeological research since its inception. Ceramics are used to define prehistoric cultural units, delineate their boundaries, and identify their chronological sequence. Untempered clay used in ceramic production will shrink and crack during drying or firing. To alleviate this, various forms of temper were added to the clay to provide greater strength. Crushed rock was frequently employed for this purpose. Increasingly during the late Classic period, old broken pottery was crushed and added to the clay as temper, providing an additional diagnostic ceramic attribute. Sherd tempering appears to be limited to redwares at Loma de Rio, indicating early application of this method in the temporal ceramic sequence.^{57 58 59 60}

Loma del Rio is significant because of the use of stone cobble as a core for adobe wall construction. The walls of the rooms at Loma del Rio were constructed by forming adobe around a core of stones. The stones were taken from the local bedrock formation. The adobe was made by mixing clay from the river banks with water. Wooden forms may have been placed on either side of the stone core in order to build up the adobe walls. The surfaces of the walls may have been plastered with caliche, a hard-packed soil that contains high concentrations of lime (calcium carbonate). While this construction method is seen in other areas, it is uncommon in the Phoenix Basin.⁶¹

There is evidence for a network of crescent-shaped terrace gardens built into the hillside to the west and south of the roomblock. In addition to irrigation agriculture, Hohokam farmers also built hillside terraces to contain small amounts of rain. These terraces were ideal for growing agave, also known as the century plant, because agave plants required very little water. Agave was an important food source, especially during periods of drought. The Hohokam ate the nutritious heart of the agave and used the fibers from the leaves to weave cloth or make rope. It is possible that they traded some of the agave with other villages for items that they might have needed. Other crops such as corn, beans and squash could have been planted below in fields irrigated by water from the Salt River.^{62 63 64}

Loma del Rio is a significant site on many levels. From a recreation and tourism standpoint the site enhances the City of Tempe's park system. Having an archaeological site in an urban setting allows easy accessibility to tourists and residents alike. From an archaeological standpoint, it is important to understanding Tempe and the Valley of the Sun's past as it relates to Hohokam occupation for approximately 1500 years. Small farmsteads are relatively rare in the metropolitan area, and most interpretive efforts have gone into large towns/sites such as Pueblo Grande. Loma del Rio gives us a glimpse at life in a small settlement where farming terraces rarely found in the center of the Salt River Valley occur much as they do further out at higher elevations. Archaeological sites give us more information on how the Valley of the Sun was populated, the location of settlements, and how they interacted with one another.

Loma del Rio is also significant by association with a number of prominent archaeologists of their period including; Cushing, Hayden, Halseth, Midvale, and Schroader. The longevity of the time period that is represented (1890s to 1930s+) reinforces the site's significance to the history of Hohokam archaeology.

CHRONOLOGY

- 1200-1450 – Loma del Rio occupied by the Hohokam people during Classic Period
- 1700-1850 – Akimel Au-Authm use site as shrine leaving offerings such as Spanish glass beads, called "padre beads," made in Spain and given as gifts from priests and Spanish settlers
- 02/28/1859 – A reservation was set apart for the Maricopa and Pima by Act of Congress February 28, 1859
- 08/31/1876 – Maricopa and Pima reservation enlarged by Executive Order
- 06/14/1879 – Maricopa and Pima reservation revoked and other lands set apart by Executive Order
- 05/05/1882 – Maricopa and Pima reservation was again enlarged by Executive Order
- 11/15/1883 – Maricopa and Pima reservation was again enlarged by Executive Order to its final configuration. No treaty was ever made with Maricopa and Pima
- 02/12/1887 – First recorded historic site visit by the Hemenway Expedition, headed by Frank Hamilton Cushing⁶⁵
- 06/08/1906 – United States Congress enacts the Antiquities Act enacted decreeing Presidential authority to establish National Monuments and requiring permits to be approved before archeological investigations can be undertaken on federal land.
- 01/31/1914 – President Woodrow Wilson signed Proclamation No. 1262 declaring the area as the Papago Saguaro National Monument
- 04/06/1928 – Loma del Rio surveyed by Gila Pueblo archaeological staff (possibly including Frank Midvale a member of this group who was living in Phoenix at this time)
- 1930 – Eisendrath House constructed by noted Arizona architect Robert T. Evans. The building is an important example of Evans' skill and mastery of adobe architecture. The construction of the Eisendrath House, and of other buildings designed by Evans, helped inspire a revival of adobe architecture in the Salt River Valley from the mid-twenties to the start of World War II.
- 04/07/1930 – Act of Congress (amended on July 7, 1932) abolishes the Papago Saguaro National Monument

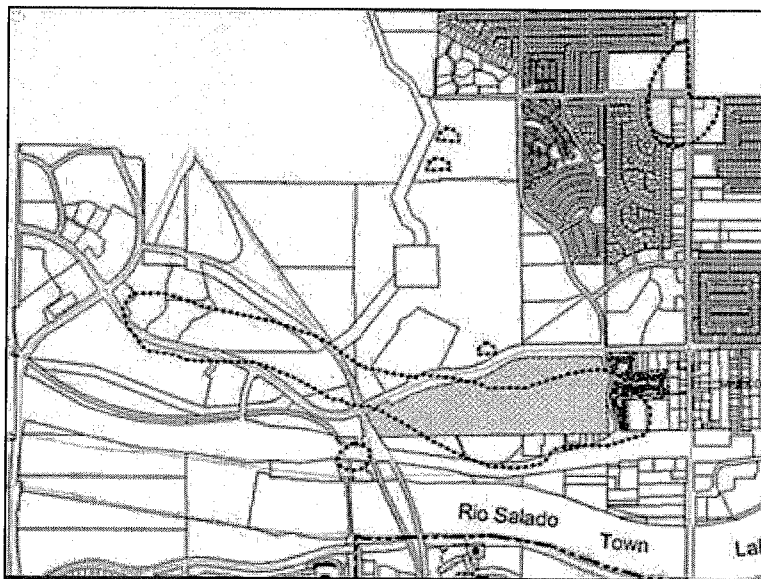
- 1933 – Works Progress Administration constructs Moeur Park Ramadas/Structures in Tempe Papago Park; stone and concrete bridge, raised planters, stairs, planter borders, stone benches and tables, automobile bridge, retaining walls, irrigation boxes
- 06/06/1935 – President Franklin D. Roosevelt conveys Papago Park land by Patent Number 1076186 to City of Tempe for use as a municipal park⁶⁶
- 08/21/1935 – United States Congress enacts the Historic Sites Act of 1935 declaring national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States
- 03/09/1939 – Loma del Rio recorded by Odd S. Halseth, Albert H. Schroeder and Julian T. Hayden; all prominent archaeologists
- 04/13/1955 – City of Tempe conveys 19.72 acres of Papago Park land by Patent Number 1153368 to Salt River Project Agricultural Improvement and Power District for construction of office and other facilities⁶⁷
- 07/25/1961 – Loma del Rio was visited by Dr. Donald H. Morris and Frank Midvale who completed an ASU Archaeological Survey Form noting "heavy impact by pot hunters
- 1964 – Loma del Rio visited by Arizona State Museum personnel
- 01/01/1970 – United States Congress enacts the National Environmental Policy Act of 1969 in which the "cultural environment" is considered through provisions to preserve important historic, cultural, and natural aspects of our national heritage⁶⁸
- 01/06/1973 – Loma del Rio surveyed by Betina Rosenberg and Donald E. Weaver, Jr.
- 09/10/1977 – Dr. Alfred E. Dittert, Jr. and ten graduate students from his ASU Cultural Inventory Methods class assess archaeological resources within the Rio Salado Developmental District
- 10/31/1979 – United States Congress enacts the Archaeological Resources Protection Act of 1979 (ARPA) requiring appropriate Federal land manager to issue an archeological permit before survey, excavation, or collection of archeological resources occur on public land⁶⁹
- 1984-1986 – Site excavation by Arizona State University archaeology students under the supervision of Dr. Dittert
- 06/15/1984 – Tempe transfers 10.6 acres to Arizona Historical Society for construction of Central Arizona Museum of History⁷⁰
- 02/09/1988 – Loma del Rio part of an archaeological survey of a 40-acre area of Tempe Papago Park commissioned by the City of Tempe titled "A Plan for the Management of Archaeological Sites in the Tempe Papago Park Area." It was conducted by Linda Williams and Karen Atwell on behalf of the Office of Cultural Resource Management, Department of Anthropology, Arizona State University

- 11/16/1990 – United States Congress enacts the Native American Graves Protection and Repatriation Act (NAGPRA) to provide a process for museums and Federal agencies to return certain Native American cultural items - human remains, funerary objects, sacred objects, and objects of cultural patrimony - to lineal descendants, culturally affiliated Indian tribes, and Native Hawaiian organizations⁷¹
- 07/05/1990 – Arizona Legislature passes parallel laws to NAGPRA that protect human burials and associated items on both private and State land; A.R.S.41-844 & A.R.S.41-865. These laws were passed to ensure discovered human remains and associated items, sacred objects, and objects important to Native Americans will be treated with respect and dignity⁷²
- 06/29/1991 – Arizona Parks Board awards Tempe a Heritage Fund Historic Preservation Grant for Loma del Rio stabilization
- 1993-1995 – Loma del Rio stabilized in partnership with Arizona State Parks and the State Historic Preservation Office with a grant from the Arizona Heritage Fund
- 10/14/1995 – Loma del Rio Archaeological Site formally dedicated by the City of Tempe as part of the Rio Salado Expo that included dedication of Papago Park Trails and Rio Salado Project Update presentations
- 11/04/1999 – Historic 1933 Moeur Park WPA Structures in Tempe Papago Park listed in Tempe Historic Property Register
- 11/21/2000 – City of Tempe (Carter Burgess) prepare Papago Park/Crosscut Canal Master Plan and Path Design broad-scale contextual relationships of trail/path and transportation connections to the details of the integrated design and art⁷³
- 08/09/2001 – City of Tempe (Arizona State Museum) adopts intergovernmental agreement respecting burial discoveries with the Four Southern Tribes⁷⁴
- 06/20/2002 – Historic 1930 Eisendrath House in Tempe Papago Park listed in Tempe Historic Property Register as an example of a Pueblo Revival style seasonal residence
- 04/17/2006 – Historic Preservation Office received a nomination for designation of the Loma del Rio Archaeological Site as a Tempe Historic Property and listing in the Tempe Historic Property Register from the Tempe Historical Museum Administrator (day 1)
- 04/19/2006 – Tempe HPO submitted zoning amendment application DS 060608 for historic overlay zoning for HPO-2006.40 (ORD# 2006.43) historic designation and listing in the Tempe Historic Property Register for Loma del Rio Archaeological Site AZ U:9:24 (ASU) (day 3)
- 05/11/2006 – Zoning & Development Code Section 6-402 Neighborhood Meeting for HPO-2006.40 (ORD# 2006.43) historic designation and listing in the Tempe Historic Property Register for Loma del Rio Archaeological Site AZ U:9:24 (ASU) (day 31)
- 05/23/2006 – Tempe Rio Salado Advisory Commission presentation by Historic Preservation Commission (day 43)
- 06/08/2006 – Tempe HPC Public Hearing for HPO-2006.40 (ORD# 2006.43) historic designation and listing in the Tempe Historic Property Register for Loma del Rio Archaeological Site AZ U:9:24 (ASU) (day 59)

- 06/13/2006 – Tempe Parks & Recreation Board Historic Preservation Commission presentation (day 64)
- 06/27/2006 – Tempe P&Z Public Hearing for HPO-2006.40 (ORD# 2006.43) historic designation and listing in the Tempe Historic Property Register for Loma del Rio Archaeological Site AZ U:9:24 (ASU) (day 78)
- 07/20/2006 – Tempe City Council introduction and first Public Hearing for HPO-2006.40 (ORD# 2006.43) historic designation and listing in the Tempe Historic Property Register for Loma del Rio Archaeological Site AZ U:9:24 (ASU) (day 101)
- 08/03/2006 – Tempe City Council second Public Hearing for HPO-2006.40 (ORD# 2006.43) historic designation and listing in the Tempe Historic Property Register for Loma del Rio Archaeological Site AZ U:9:24 (ASU) (day 115)

HPO RECOMMENDATION

The subsequent boundary discussion provides the Staff recommendation to define the setting of site AZ U:9:24 (ASU) as Assessor's parcel number 132-04-002E. This designation would include a representative sample of the prehistoric context while providing a practicable approach to designation.



Site boundary for purposes of historic designation of AZ U:9:24 (ASU) is recommended to coincide with Assessor's Parcel Number 132-04-002E. This 72 acre parcel (0.11 square mile) recognizes the site in its context of uniquely converging ecosystems and includes samples of the upper bajada, the wash/floodplains, and the creosote plains ecosystems, along with the habitation locus and terrace garden network at AZ U:9:24 (ASU). Parcel based designation additionally is practicable based on the City of Tempe GIS-based permits system.

Staff recommends designation of Assessor's parcel number 132-04-002E subject to the Condition 1 as follows.

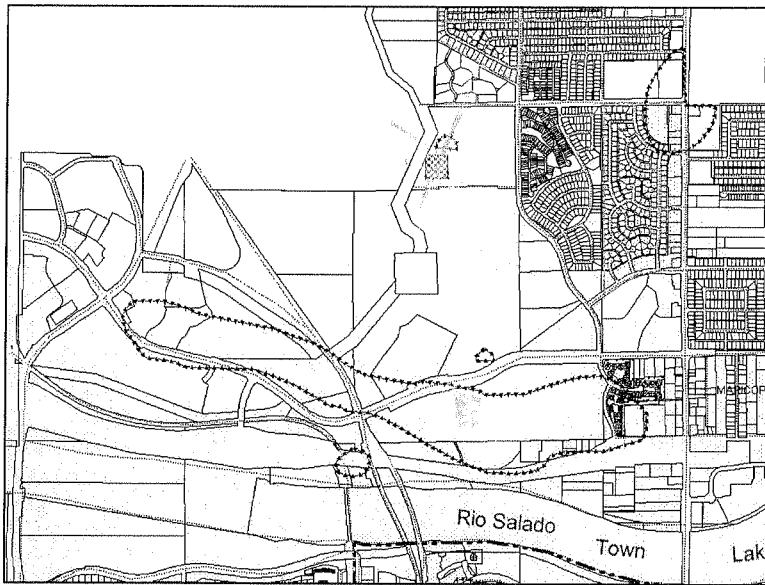
CONDITION 1 - Notwithstanding the powers and duties of the parks and recreation board in City Code Chapter 23, and the historic preservation commission in City Code Chapter 14A, the commission shall act to assist and advise the board and the city council regarding proposed alterations, new construction, demolition or removal affecting the designated historic 72 acre parcel but retain regulatory authority over the actual 3.26 acre archaeological site.

Please note that on Thursday, June 8, 2006, at a public hearing, the Tempe Historic Preservation Commission **DID NOT AGREE** with the staff recommendation, and instead approved the following recommendation.

HPC RECOMMENDATION

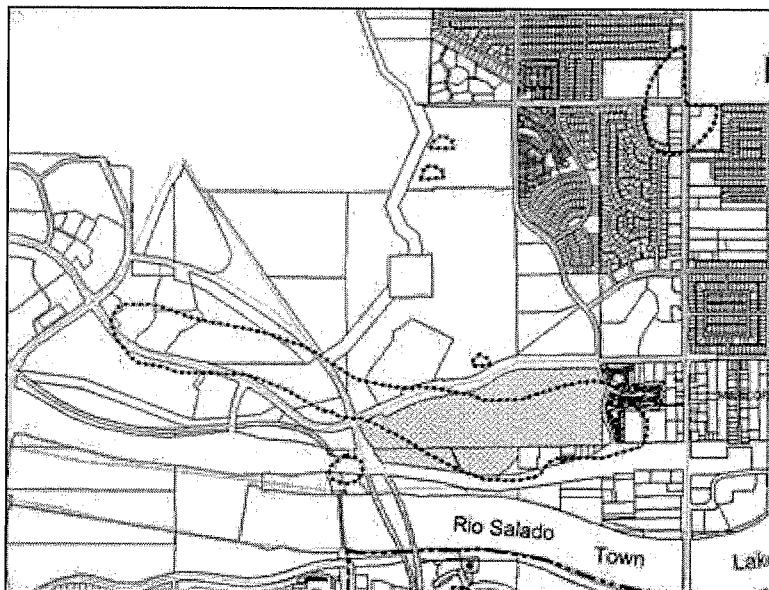
MOTION: THAT THE TEMPE HISTORIC PRESERVATION COMMISSION RECOMMEND APPROVAL OF HISTORIC PROPERTY DESIGNATION FOR THE THREE AND ONE HALF ACRE LOMA del RIO ARCHAEOLOGICAL SITE AZ U:9:24 (ASU) TO THE TEMPE PLANNING & ZONING COMMISSION. MOTION CARRIED UNANIMOUSLY.

Historic Property Designation Boundary Option 1 –



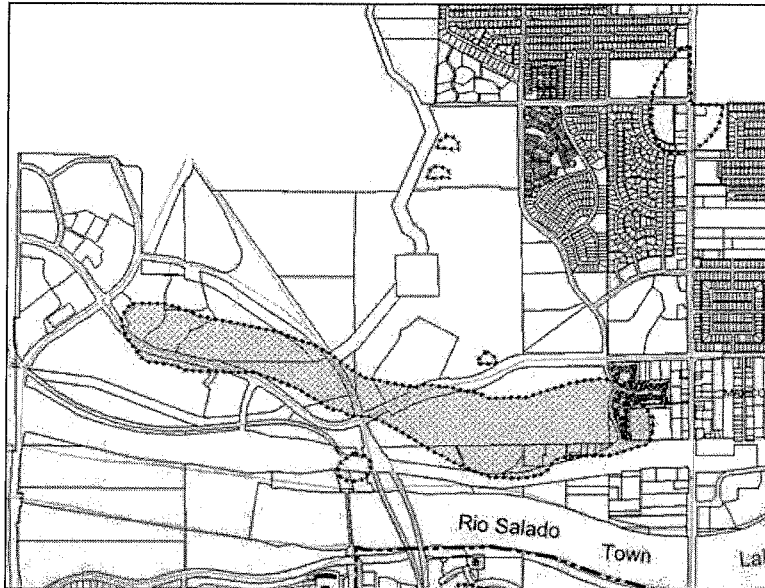
a smaller site boundary designation that includes the areal extent of AZ U:9:24 (ASU) as indicated on the ASM site card. Note that this will provide a reference to the Universal Transverse Mercator (UTM) Grid, but no legal description exists. A narrative of this area is provided by Dr. Dittert (1984). "The core area of the site covers about 3,200 square meters (0.79 ac.). The west and south slopes below the site is a network of crescent-shaped terrace gardens covering almost one hectare (2.47 ac.)." This boundary designation would exclude important context for the site and is not recommended.

Historic Property Designation Boundary Option 2 –



a larger boundary designation that includes Assessor's parcel number 132-04-002E along with 132-20-008J. This 96 acre (0.15 square mile) option would provide expanded ecological context by including the parcel south of the site adjacent to the Salt River. Like the recommended boundary, this is also a parcel based designation that is practicable based on the City of Tempe GIS-based permits system and includes only property owned by the City of Tempe.

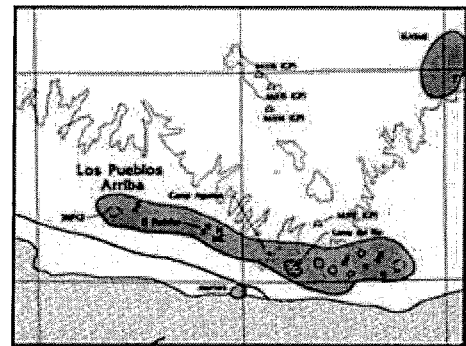
Historic Property Designation Boundary Option 3 –



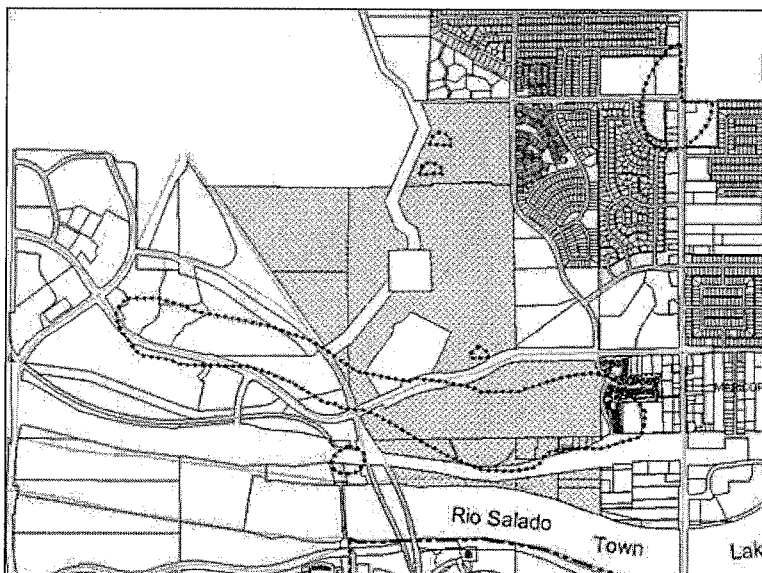
The extent of the archaeologically sensitive portion of Tempe Papago Park covers a contiguous 172.672 acre area (0.2698 square miles) identified as Los Pueblos Arriba on Jerry Howard's exhaustive Hohokam canal study that identified archaeological sites and features throughout the Salt River Valley (Howard and Huckleberry 1991).

Most of the sites and features in the Los Pueblos Arriba area remain buried or have been subsequently destroyed and this boundary designation is therefore not recommended.

a larger boundary designation that includes the area indicated as archaeologically sensitive in the City of Tempe GIS-based permits system approximately half of which is private property. While it is within the authority of Tempe HPC to designate private property, this has not previously occurred.



Historic Property Designation Boundary Option 4 –



a larger boundary designation that includes the 296 acre area (0.4625 square miles) City of Tempe owned part of the 1500 total acre Papago Park. This boundary designation greatly exceeds the areal extent of intense tangible Hohokam habitation related to Loma del Rio while excluding adjacent archaeologically sensitive areas and is therefore not recommended.

RECOMMENDATIONS

HPO Staff recommends historic designation and listing in the Tempe Historic Property Register for the **Loma del Rio Archaeological Site AZ U:9:24 (ASU) HPO-2006.40 ORD# 2006.43**, and that the site boundary for purposes of historic designation of AZ U:9:24 (ASU) be that identified as Assessor's Parcel Number 132-04-002E, a 72 acre parcel that includes samples of related ecosystems along with the habitation locus and terrace garden network at AZ U:9:24 (ASU) subject to Condition 1 below.

CONDITION 1 - Notwithstanding the powers and duties of the parks and recreation board in City Code Chapter 23, and the historic preservation commission in City Code Chapter 14A, the commission shall act to assist and advise the board and the city council regarding proposed alterations, new construction, demolition or removal affecting the designated historic 72 acre parcel but retain regulatory authority over the actual 3.26 acre archaeological site.

The basis for this recommendation is that the Loma del Rio Archaeological Site AZ U:9:24 (ASU) has yielded information important in prehistory.

HPC recommends option one above as follows. THAT THE TEMPE HISTORIC PRESERVATION COMMISSION RECOMMEND APPROVAL OF HISTORIC PROPERTY DESIGNATION FOR THE THREE AND ONE HALF ACRE (OPTION ONE IN THE HPO REPORT) LOMA del RIO ARCHAEOLOGICAL SITE AZ U:9:24 (ASU) TO THE TEMPE PLANNING & ZONING COMMISSION. MOTION CARRIED UNANIMOUSLY.



<http://www.topozone.com/map.asp?z=12&n=3699990&e=412775&s=50&size=l&datum=nad83&layer=DRG25>

<http://www.maricopa.gov/Assessor/GIS/Maps/assessor.mwf?ToolBar=Off&LAT=33.437644&LON=-111.935177&WIDTH=4407.439970&UNITS=ft&EXT=.MWF>

ENDNOTES

- ¹ Wikipedia, the free encyclopedia, 2006; http://en.wikipedia.org/wiki/Papago_Park [Papago Park is a hilly desert park covering some 490 hectares (1200 acres) in its Phoenix extent, and some 140 hectares (296 acres) in its Tempe extent (the latter is also referred to specifically as Tempe Papago Park). The park is surrounded by the cities of Phoenix and Tempe. Papago Park is notable for its many distinctive geological formations and its wide variety of typical desert plants, including the giant saguaro cactus.] Site AZ U:9:24 (ASU) Universal Transverse Mercator coordinates: 3699990 m.N., 412775 m.E., U.T.M. Zone 12, Maricopa County, AZ <http://www.topozone.com/map.asp?z=12&n=3699990&e=412775&s=50&size=1&datum=nad83&layer=DRG25>
- ² Tempe Zoning & Development Code, Part 5 – Overlay Zoning Districts, Amended June 2, 2005; http://www.tempe.gov/zoning/ZDC_amended/ [The purpose of the Rio Salado Overlay District is to accomplish the objectives of the specific plan referred to as the "Tempe Rio Salado Plan" as adopted by the City Council.]
- ³ Tempe General Plan 2030 <http://www.tempe.gov/tdsi/GP2030/> [Tempe General Plan 2030 was adopted by city Council on 4 December 2003, and was ratified by Tempe voters on May 18, 2004. Created to guide Tempe development, the document includes maps, goals, policies, objectives and strategies pertaining to various elements such as land use, transportation, recreation, the environment, and other issues affecting the quality of life of Tempe residents, businesses and visitors. The new plan was developed through extensive public participation, to address 2000 Census data, changes to state legislation, and significant development in Tempe since 1997, when previous General Plan 2020 was adopted.]
- ⁴ Salt River Pima-Maricopa Indian Community, 2004; History & Culture http://www.saltriver.pima-maricopa.nsn.us/history_culture/index.htm [The Salt River Pima-Maricopa Indian Community is comprised of two Native American tribes: The Pima, or "Akimel Au-Authm," (River People); and the Maricopa, or "Xalychidom Piipaash," (People who live toward the water). The Maricopa tribes were small bands that lived along the lower Gila and Colorado rivers. In the early 1800's they migrated toward Pima villages. The Pima, known as a friendly tribe, established a relationship with the Maricopa. The Pima believe they are the descendants of the "Hohokam," (those who have gone) an ancient civilization who lived in Arizona nearly two thousand years, dating as far back as 300 BC.]
- ⁵ Rice, Glen, 1988; ASU Dept of Anthropology "A Plan for The Management Of Archaeological Sites In The Tempe Papago Park Tempe, Arizona. 2001.0000.0133 [ASU OCRM (Rice) surveyed 40 acres of the high ground of Tempe Butte and the Papago Hills and made recommendations for conservation and interpretation of the area divided into 3 planning zones which together were noted to represent an island of natural desert in a vast plain of canal irrigated fields.]
- ⁶ Rice, 1988
- ⁷ Haury, Emil W., 1945; The Excavation of Los Muertos and Neighboring Ruins in the Salt River Valley, Southern Arizona, Papers, Peabody Museum of Archaeology and Ethnology, vol. 24, no. 1 <http://www.nap.edu/readingroom/books/biomems/ehaury.pdf> [The excavation of Los Muertos and neighboring ruins in the Salt River valley, southern Arizona, by Emil W. Haury was based on the work of the Hemenway Southwestern Archaeological Expedition of 1887.]
- ⁸ Cushing, Frank Hamilton, 1894; The Hemenway Southwestern Archaeological Expedition <http://rmc.library.cornell.edu/EAD/html/docs/RMM09186.html> [Cushing lead the Hemenway Southwest Archaeological Expedition, which culminated in months of excavations around the area of Tempe, Arizona, and came to be known as "the first major archaeological expedition into the Southwest"] *Site includes biographical sketch of FHC and the "stellar cast of characters" who accompanied him.*
- ⁹ Reed, Jefferson 2005; History Of Archaeology In The Southwest http://www.ic.arizona.edu/~mmap/summer_2005/mod01pr.htm [In 1928, Harold S. Gladwin and Winifred Jones MacCurdy (Gladwin) establish the Gila Pueblo Archaeological Foundation in Globe where in 1930 Emil Haury begins seven highly productive years as Assistant Director of the Foundation. In 1937, Gladwin and Haury publish the full definition of Hohokam culture in Excavations at Snaketown: Material Culture].
- ¹⁰ Kwiatkowski, Scott, 1988; The Effects of Postoccupational Disturbance on Archaeobotanical Data From AZ U:9:24 (ASU) <http://library.lib.asu.edu/search/> [Analysis of flotation and pollen samples were undertaken to

determine how these data were effected by postoccupational disturbance at the Civano phase, Hohokam site AZ U:9:24 (ASU). A predictive model was constructed to anticipate the effects of postoccupational disturbance at other archaeological sites and suggestions are provided for researchers faced with potentially disturbed archaeobotanical data bases.]

- ¹¹ Kwiatkowski, 1988
- ¹² U. S. 74th Congress, Historic Sites Act; 1935; http://www.cr.nps.gov/local-law/FHPL_HistSites.pdf [The Historic Sites Act of 1935 established a mandate for federal interest in a wide range of nationally important archeological sites and historic structures.]
- ¹³ National Park Service, 2005: Public Archaeology in the United States: at timeline <http://www.cr.nps.gov/archeology/timeline/Time2.htm> [In 1906, citizens concerned about protecting archeological areas on federal and Indian lands were gratified by the passage of the Antiquities Act. This statute recognized that archeological sites on U.S. public lands are special and important resources and their historic, scientific, commemorative, and cultural values must be preserved for present and future generations of Americans. A new era began with the passage of the Antiquities Act. Public awareness about archeology increased, as did the involvement of public agencies and the establishment of preservation policies. National Monuments commemorating and preserving archeological sites were created throughout the U.S. Support for scientific methods in archeology grew and professionalism in the field of American archeology developed. The National Park Service (NPS) was established in 1916 to care for outstanding cultural and natural resources. The NPS's responsibilities included managing historical and archeological areas in the U.S. as well as active engagement in site preservation. Concerns about site destruction and the need for public support to preserve sites continued through this period.]
- ¹⁴ Kwiatkowski, 1988
- ¹⁵ Dittert, Alfred E., Jr., 1984; Request for Permission to Conduct Investigations at AZ U:9:24 (ASU); a Rio Salado Development Unit report to Tempe City Manager from Department of Anthropology January 18, 1984 KARL 2001.2043.0300 [The Department of Anthropology, ASU, undertook a field research program designed to identify archaeological and historic remains in the Tempe section of the Rio Salado Project in September 1977, at the request of the Tempe City Planning Division. Among the cultural resources defined was a Hohokam site with stone masonry walls, AZ U 9:24 (ASU).]
- ¹⁶ Rice, 1988
- ¹⁷ Teague, Lynn S., August 2000; The Four Southern Tribes And The Hohokam Of The Phoenix Basin <http://www.tempe.gov/historicpres/docs/FourSouthernTribesHohokam.pdf> [The focus of this assessment is the relationship of cultural affiliation that exists between the prehistoric Hohokam and the people of the modern Four Southern Tribes: Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, and Tohono O'odham Nation, with particular emphasis on the connections between the prehistoric Hohokam of the Phoenix Basin.]
- ¹⁸ Howard, Jerry B. and Gary Huckleberry, 1991; <http://www.waterhistory.org/histories/hohokam2/> The Operation and Evolution of an Irrigation System: The East Papago Canal Study. Soil Systems Publications in Archaeology No. 18, Phoenix [From A.D. 600 to 1450, the Hohokam constructed one of the largest and most sophisticated irrigation networks ever created using preindustrial technology. Now Curator of Anthropology at the Mesa Southwest Museum, in 1991 Jerry B. Howard, published this master compilation of the locations of Hohokam settlements and canals in the Salt River Valley. The resulting map represents a key resource in public planning and professional research in the Phoenix area.] *Site includes maps of prehistoric canals in relationship to historic era canals.*
- ¹⁹ Rice, 1988
- ²⁰ Rice, 1988
- ²¹ Aguila, Lourdes, 2006; Phoenix Basin Prehistory 2006.0000.0032 Manuscript on file at Archaeological Consulting Services, Ltd. ACS Tempe <http://www.acstempe.com/> [The ACS name dates back to 1977 when they became the second cultural resource firm to open its doors in Arizona. Valley based, ASC has developed

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- the Hohokam context statement used in this report to provide an overview of these people who inhabited the Valley between A.D. 1 and A.D. 1450 and are perhaps best known for the sophisticated canals that settlers later used for irrigation.] Manuscript includes a period chronology indicating phases of the Hohokam tradition.] *Site links to overview of Archaeological Consulting Services, Ltd. (ACS), an Arizona corporation. 2006.0000.0032*
- 22 Sires, Earl W., Jr., 1983a; Archaeological Investigations at Los Fosas (AZ U:15:19): A Classic Period Settlement on the Gila River. In *Hohokam Archaeology Along the Salt-Gila Aqueduct, Central Arizona Project, Volume 6: Habitation Sites on the Gila River*, edited by Lynn S. Teague and Patricia L. Crown, Arizona State Museum, Archaeological Series 150. University of Arizona, Tucson.
- 23 Teague, 2000
- 24 Teague, 2000
- 25 Aguila, 2006
- 26 Sires, Earl W., Jr., 1983b; Excavations at El Polvorón (AZ U:15:59). In *Hohokam Archaeology along the Salt-Gila Aqueduct, Central Arizona Project, Vol. IV: Prehistoric Occupation of the Queen Creek Delta*, edited by Lynn S. Teague and Patricia L. Crown, Arizona State Museum Archaeological Series 150. U of A
- 27 Teague, Lynn S., 1984; The Organization of Hohokam Economy. In *Hohokam Archaeology along the Salt-Gila Aqueduct, Central Arizona Project, Vol. IX: Synthesis and Conclusions*, edited by Lynn S. Teague and P. L. Crown Arizona State Museum Archaeological Series 150. U of A <http://library.lib.asu.edu/search/> [The Salt-Gila Aqueduct Project began in 1980, as one in a long series of archeological undertakings associated with the Bureau of Reclamation's Central Arizona Project. Salt-Gila represented the first substantial series of excavations focused on smaller villages and farmsteads rather than the largest settlements.] *Site links to ASU Library Government Document call number: MUS 1.2:A 62/150 azdocs.*
- 28 Teague, 2000
- 29 Teague 2000
- 30 Hackenberg, Robert A., 1983; Pima and Papago Ecological Adaptations (pp. 161-177) in *Southwest*, Volume 10, Alfonso Ortiz, Volume Editor, *Handbook of North American Indians*, William C. Sturtevant, General Editor, Smithsonian Institution, Washington, D.C. <http://library.lib.asu.edu/search/tHandbook+> [Some patterns of climatic variation are historical, unfolding over centuries in cycles of aridity and excessive precipitation; and some patterns are contemporary year-to-year or month-to-month variations within the long term trends.]
- 31 Gasser, Robert E., 1976; Hohokam subsistence: a 2,000 year continuum in the indigenous exploitation of the lower Sonoran desert. USDA Forest Service, Albuquerque, N.M. <http://library.lib.asu.edu/search> [The basic hypothesis of this study is that given an environment that is relatively unchanged and given an indigenous population in such an environment, an ethnoarchaeological approach can be taken that tentatively connects history and prehistory.]
- 32 Gasser, 1976
- 33 McCullough, Sylvia Kihn, 1985; A model for alternative subsistence strategies in the Hohokam Classic period thesis Honors Program, Bachelor of Arts, ASU <http://library.lib.asu.edu/search/aMcCullough> [A model for subsistence strategies is presented in relation to the Hohokam inhabitants of AZ U:9:24 (ASU), a late Classic period site. Based on archaeological, environmental, ethnobotanical, palynological, and ethnographic studies, three alternatives to traditional canal agriculture are suggested; 1) specialized agriculture in terrace gardens, 2) exploitation of riparian and desert biomes for wild food resources, and 3) trade as an adjunct to subsistence. Hypotheses and implications for testing are presented.]
- 34 Gasser, 1976
- 35 Kwiatkowski, 1988
- 36 Gart, Jason H., 1996; Papago Park: a history of Hole-in-the-Rock from 1848 to 1995, Pueblo Grande Museum Occasional Papers No. 1 <http://library.lib.asu.edu/search/agart> ["A detailed history of Papago Park that utilizes a variety of primary documents, revealing little known facts about Papago Park. Includes discussions of the park

as a National Monument (1914-1930), the work of the Civilian Conservation Corps (1933-1940), the World War II Prisoner of War Camp and later developments]

- ³⁷ George, Dick, 1991; Papago Park, Where The History Is Sometimes More Colorful Than The Rocks, ASU Hayden Arizona Collection CE EPH DM-181 <http://info.lib.asu.edu/BRS/>
- ³⁸ Ingalls, Winfred F., 1868; Official plats of W. F. Ingalls survey of T. 1 N., R. 5 E., and T. 2 N., R. 5 E., approved October 22, 1868, also Excerpt from field notes of W. F. Ingalls' survey, Arizona Territory Volume 2. <http://library.lib.asu.edu/search/Xgeneral+> [W. F. Ingalls of the Surveyor General's Office, San Francisco, California makes first surveys of the four quarter-sections, or 640 acres, which comprise section 15, T.1N., R.4E., Original Tempe Townsite.]
- ³⁹ Jacobs, David and Glen E. Rice; 2002; Vegetation Map of Phoenix, Arizona 1867 – 1868 (Based on Public Lands Survey logs) http://caplter.asu.edu/docs/contributions/Vegetation_of_Phx_color.pdf [This map is the result of two projects, the vegetation reconstruction of T1N R1E, T1N R2E, T1N R3E, T1N R4E, T2N R1E, T2N R2E, T2N R3E and T2N R4E are from Jacobs and Rice 2002, and the remainder of the map is from Jacobs and Ingram 2003]
- ⁴⁰ Gasser, Robert E., 1979; Seeds, Seasons, and Ecosystems: sedentary Hohokam groups in the Papaguería. *Kiva*, Vol. 44, nos. 2-3 (Winter-Spring), pp. 101-111. Tucson, Arizona Archaeological and Historical Society <http://www.nps.gov/tuma/bibliography/g.html> [Variability and seasonality in archaeobotanical and archaeological remains from three adjacent ecosystems in the Papaguería of south-central Arizona are examined in relation to settlement-subsistence hypotheses. A three ecosystem model is developed which indicates that the Hohokam in the Papaguería were able to maintain sedentary villages by utilizing, in different manners, three distinct ecosystems. It is suggested that the Hohokam in this desert region intermittently maintained agricultural field houses in the creosote plains, cacti gathering camps on mountain slopes, and permanent villages and fields on major wash flood plains. To some extent, sedentism in the Papaguería depended upon exploitation of non-flood plain ecosystems.]
- ⁴¹ Kwiatkowski, 1988
- ⁴² Kim Savage, interviewed by Joe Nucci, May 10, 2006; Temporal review of aerial photographs demonstrate the continued effectiveness of the garden terrace to trap and retain precipitation. [Kim Savage is the Public Outreach Manager for the Archaeological Research Institute at Arizona State University. Kim retains a special relationship with Pueblo Loma del Rio site and uses it extensively for education and interpretation.]
- ⁴³ Kwiatkowski, 1988 [Figure 6-4 provides cross-section views of trench wall profiles through terraces]
- ⁴⁴ Dittert, 1984
- ⁴⁵ McCullough, 1985
- ⁴⁶ Dove, Donald E., 1984; Subsistence Issues and Population Stability in the Northern Hohokam Periphery, Ms on file ASU Department of Anthropology [cited in McCullough, 1985]
- ⁴⁷ McCullough, 1985
- ⁴⁸ McCullough, 1985 [Figure 10 lists Trade Objects recovered from AZ U:9:24 (ASU) by point of origin.]
- ⁴⁹ Jacobs and Rice, 2002 [Several thousand people lived in Pueblo Grande (west of Papago Buttes) and perhaps as many as one thousand lived at Plaza Tempe (on the southern bank of the river opposite Papago Buttes.)]
- ⁵⁰ Logan Museum Ancient Cultures of the Southwest (Casas Grandes Culture) 2006; <http://www.beloit.edu/~museum/logan/southwest/casasgrandes/introduction.htm> [The ware referred to as Ramos Polychrome originates from the Casas Grandes Culture which evolved between AD 1150 and AD 1450 along the river valleys of northern Mexico, extending northward into extreme southern New Mexico and Arizona. The cultural center was the town of Paquimé, also known as Casas Grandes, located along the Rio Casas Grandes. The developmental boom of Casas Grandes culture occurred after about 1300.]
- ⁵¹ Jacobs and Rice, 2002
- ⁵² U.S. Department of the Interior, National Park Service, 2002; Listing a Property in the National Register of Historic Places, How to Apply Criteria for Evaluation <http://www.cr.nps.gov/nr/listing.htm> [The National Register's standards for evaluating the significance of properties were developed to recognize the accomplishments of all peoples who have made a significant contribution to our country's history and heritage.]

The criteria are designed to guide State and local governments, Federal agencies, and others in evaluating potential entries in the National Register.]

- ⁵³ Savage, Kim, 1999; Pueblo Loma del Rio, an ancient Hohokam site in Tempe Papago Park [Site AZ U:9:24 (ASU)] http://archaeology.asu.edu/vm/southwest/loma/loma_del_rio.htm [The Archaeological Research Institute was established in 1995 as a unit of Arizona State University to undertake the preservation of archaeological materials and related data, to pursue research activities associated with the archaeological record, and to conduct educational programs to disseminate knowledge of the past to Arizona's citizens.] *Site links to Archaeological Research Institute Loma del Rio narrative.*
- ⁵⁴ Tempe Historical Museum 2005 - Loma del Rio: Prehistory in Papago Park http://www.tempe.gov/museum/prehistory/loma_del_rio.htm [The Tempe Historical Museum is a center where the community comes together to celebrate Tempe's past and ponder the future. THM is a community history museum that explores Tempe's identity and builds connections between residents and their community. Toward that end, THM Staff support the Tempe Preservation program through active participation, advocacy, consultation, and research. Museum Administrator, Dr. Amy Douglass, initiated the process for historic property designation of the Loma del Rio Archaeological Site and listing in the Tempe Historic Property Register by providing the nomination.] *Site links to Tempe Historical Museum Loma del Rio narrative.*
- ⁵⁵ Tempe Historical Museum, 2005
- ⁵⁶ Tempe Historical Museum, 2005
- ⁵⁷ Kwiatkowski, 1988
- ⁵⁸ Douglass, Amy A., 1990; LD179.15 1987D .D68 Prehistoric exchange and sociopolitical development in the plateau southwest (In The Evolution of North American Indians, a 31 volume series of outstanding dissertations edited by David Hurst Thomas and published by Garland Publishing, New York). [annotate] *Site links to ASU Library call number: LD179.15 1987D .D68 dissertation basis for published volume.*
- ⁵⁹ Logan Museum Pottery-Making Techniques <http://www.beloit.edu/~museum/logan/southwest/introduction/techniques.htm> [The first step in making pottery was to collect and prepare appropriate clay. Clay was usually obtained locally, as it had to be carried from the source to the village. Because of this, clay is an important factor today in identifying pottery. In the most general terms, Mogollon pottery is made from brown clays, Hohokam from buff, Anasazi from white to gray, and Salado from red. Of course not all clay in one area is the same, and there is a fair amount of variation throughout all types.]
- ⁶⁰ Kwiatkowski, 1988
- ⁶¹ Tempe Historical Museum, 2005
- ⁶² Tempe Historical Museum, 2005
- ⁶³ Savage, 1999
- ⁶⁴ Gasser, 1976
- ⁶⁵ Hinsley, Curtis M. & David R. Wilcox, 2002 – The Lost Itinerary of Frank Hamilton Cushing, University of Arizona Press E78.S7 F725 1996 [A vivid account of the first attempt at scientific excavations in the Southwest, Cushing's itinerary is both an exciting tale of travel through the region and an intellectual adventure story that sheds important light on the human past at Hohokam sites in Arizona's Salt River Valley.] *Site links to ASU Library call number: E78.S7 F725 1996*
- ⁶⁶ U.S. General Land Office Patent Number 1076186 <http://www.tempe.gov/pkrec/parkfacil/parks/Papago%20Land%20Patent%201935.pdf> [Land Patent conveying land to City of Tempe for a municipal park 1935] *Site links to scanned image of original document.*
- ⁶⁷ U.S. Bureau of Land Management Patent Number 1153368 <http://www.tempe.gov/pkrec/parkfacil/parks/Papago%20Land%20Patent%201955.pdf>
- ⁶⁸ U.S. Congress, 1969; Public Law 91-190 – January 1, 1970 National Environmental Policy Act of 1969, as amended <http://ceq.eh.doe.gov/nepa/regs/nepa/nepaegia.htm> [National Environmental Policy Act of 1969 (NEPA); 42 U.S.C. 4321-4347 is the basic national charter for protection of the environment. It establishes

policy, sets goals, and provides means for carrying out the policy.] *Site includes link to full text of the amended act.*

- ⁶⁹ U.S. Congress, 1979; Public Law 96-95 – October 31, 1979 Archaeological Resources Protection Act of 1979 <http://archnet.asu.edu/Topical/CRM/usdocs/arpa79.html> [The Archaeological Resource Protection Act (ARPA) was passed to insure our cultural heritage would be preserved.] *Site includes link to full text of the amended act.*
- ⁷⁰ Solliday, Scott 1990; History of Tempe Papago Park [2000.0000.697](#)
- ⁷¹ U.S. Congress, 1990; Public Law 101-601--November 16, 1990 Native American Graves Protection and Repatriation Act <http://www.cr.nps.gov/nagpra/MANDATES/25USC3001etseq.htm> [The Native American Graves Protection and Repatriation Act (NAGPRA) provides a process for museums and Federal agencies to return certain Native American cultural items -- human remains, funerary objects, sacred objects, and objects of cultural patrimony - to lineal descendants, culturally affiliated Indian tribes, and Native Hawaiian organizations.] *Site includes link to full text of the amended act.*
- ⁷² Arizona State Museum 2006; Human Burials, Sacred Objects, and You! <http://www.statemuseum.arizona.edu/arch/arclaws.shtml> [In 1990 the Arizona Legislature passed two laws that protect human burials and associated items on both private and State land. These new laws are important to everyone in Arizona. They were passed because of the need to treat human remains and associated items, sacred objects, and objects important to Native Americans with respect and dignity.] *Site includes summaries and links to the legislation and to related Arizona State Museum programs.*
- ⁷³ Carter Burgess 2000; Papago Park/Crosscut Canal Master Plan and Path Design (Bureau of Reclamation funding) [2002.0000.0028](#) [The City of Tempe partnered with Carter Burgess to prepare the Papago Park/Crosscut Canal Master Plan and Path Design. The City of Tempe and the Bureau of Reclamation provided funding for the planning process. The Plan was developed between November 1999 and October 2000 by staff from Carter Burgess, Drake & Associates, Thinking Caps, Nancy Dallett (historian) and Joan Baron. The master plan reflects a range of issues and levels of planning from the broad-scale contextual relationships of trail/path and transportation connections to the details of the integrated design and art.]
- ⁷⁴ City of Tempe, 2001; Intergovernmental Agreement C2001-161—Aug. 9, 2001 Tempe Repatriation Agreement <http://www.tempe.gov/historicpres/docs/FourSouthernTribesHohokam.pdf> [This Agreement helps to ensure that projects initiated and conducted by the City of Tempe or on property held by the City of Tempe operate within the laws of the State of Arizona with respect to discovery and disposition of remains or objects subject to statutory control. The Agreement provides mutually accepted procedures in advance of construction to minimize the risk of inappropriate field operations. The City's intent to conduct its activities in a manner appropriate to the concerns and respectful of the beliefs of all parties is enhanced by this advance preparation.]